

NOTES ON BROMELIACEAE, XIV

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TROPICAL AMERICA

REALIGNMENTS IN THE PITCAIRNIOIDEAE

Thanks to the courtesy of a loan from Professor Merxmüller of the Botanisches Staatssammlung of München, it has been possible to verify the characters of Cottendorfia florida Schult. f., the type species of the genus. This in turn has led to a re-examination of the relationship between Cottendorfia and Lindmania Mez, with the unexpected discovery that Lindmania consists of two genera, the typical one of which is not separable from Cottendorfia. Typical Lindmania, which is native of the Guayana Highland of southern Venezuela, has the short basal placentae supposedly distinctive of Cottendorfia and in addition shares with it the new character of versatile anthers. The remainder of Lindmania, which is found from Mexico to Argentina, has placentae extending most of the height of the locule and basifixed anthers. It constitutes a new genus. The resulting taxonomy and nomenclature are as follows:

Anthers versatile; filaments usually free; leaf-blades firm, not contracted at base; scape developed or wanting; inflorescence rarely tripinnate; heliophytic species of northeastern Brazil and the Guayana Highland.....COTTENDORFIA

Anthers basifixed; inner filaments adnate to base of petals; leaf-blades thin, more or less contracted at base; scape always developed; inflorescence often tripinnate; mesophytic species ranging from Mexico to Argentina.....FOSTERELLA

COTTENDORFIA Schult. f.

Cottendorfia Schult. f. in Roem. & Schult. Syst. 7, pt. 2: lxiv, 1193. 1830. Type species: C. florida Schult. f.

Lindmania Mez in DC. Monogr. Phan. 9:535. 1896. Type species: L. guianensis (Beer) Mez (Anoplophytum guianense Beer).

COTTENDORFIA ARGENTEA (L. B. Smith) L. B. Smith, comb. nov.

Lindmania argentea L. B. Smith, Mem. New York Bot. Gard. 9:414, fig. 78. 1957.

COTTENDORFIA BRACHYPHYLLA (L. B. Smith) L. B. Smith, comb. nov.

Lindmania brachyphylla L. B. Smith, Mem. New York Bot. Gard. 9: 416, fig. 80. 1957.

COTTENDORFIA CYLINDROSTACHYA (L. B. Smith) L. B. Smith, comb. nov.

Lindmania cylindrostachya L. B. Smith, Mem. New York Bot. Gard. 9:286, fig. 15. 1957.

COTTENDORFIA FLORIDA Schult. f. in Roem. & Schult. Syst. 7, pt.

2:1193. 1830.

COTTENDORFIA GENICULATA (L. B. Smith) L. B. Smith, comb. nov.
Lindmania geniculata L. B. Smith, Mem. New York Bot. Gard. 9:414,
fig. 79. 1957.

COTTENDORFIA GUIANENSIS (Beer) Kl. ex Baker, Handb. Bromel. 129.
 1889.

Anoplophytum guianense Beer, Bromel. 44. 1857.

Tillandsia parviflora sensu C. Koch, Ind. Sem. Hort. Berol. 1873,
 App. 4:3. 1874. Not R. & P. 1802.

Lindmania guianensis (Beer) Mez in DC. Monogr. Phan. 9:537. 1896.

COTTENDORFIA MINOR (L. B. Smith) L. B. Smith, comb. nov.

Lindmania minor L. B. Smith, Mem. New York Bot. Gard. 9:419, fig.
85. 1957.

COTTENDORFIA NAVIOIDES (L. B. Smith) L. B. Smith, comb. nov.

Lindmania navioides L. B. Smith, Mem. New York Bot. Gard. 9:419,
fig. 86. 1957.

COTTENDORFIA PALUDOSA (L. B. Smith) L. B. Smith, comb. nov.

Lindmania paludosa L. B. Smith, Mem. New York Bot. Gard. 9:284,
fig. 14. 1957.

COTTENDORFIA PHELPSIAE (L. B. Smith) L. B. Smith, comb. nov.

Lindmania phelpsiae L. B. Smith, Mem. New York Bot. Gard. 9:286,
fig. 16. 1957.

COTTENDORFIA SERRULATA (L. B. Smith) L. B. Smith, comb. nov.

Lindmania serrulata L. B. Smith, Contr. U. S. Nat. Herb. 29:283,
fig. 8. 1949.

COTTENDORFIA SERRULATA var. REDUCTA (L. B. Smith) L. B. Smith,
 comb. nov.

Lindmania serrulata var. reducta L. B. Smith, Mem. New York Bot.
 Gard. 9:414. 1957.

COTTENDORFIA STENOPHYLLA (L. B. Smith) L. B. Smith, comb. nov.

Lindmania stenophylla L. B. Smith, Mem. New York Bot. Gard. 9:
 417, fig. 84. 1957.

COTTENDORFIA STEYERMARKII (L. B. Smith) L. B. Smith, comb. nov.

Lindmania steyermarkii L. B. Smith, Mem. New York Bot. Gard. 9:
 416, fig. 81. 1957.

COTTENDORFIA SUBSIMPLEX (L. B. Smith) L. B. Smith, comb. nov.

Lindmania subsimplex L. B. Smith, Mem. New York Bot. Gard. 9:417,
fig. 83. 1957.

COTTENDORFIA THYRSOIDEA (L. B. Smith) L. B. Smith, comb. nov.

Lindmania thyrsoides L. B. Smith, Mem. New York Bot. Gard. 9:287,

fig. 17. 1957.

COTTENDORFIA TILLANDSIOIDES (L. B. Smith) L. B. Smith, comb. nov.
Lindmania tillandsioides L. B. Smith, Mem. New York Bot. Gard. 9:
 416, fig. 82. 1957.

COTTENDORFIA WURDACKII (L. B. Smith) L. B. Smith, comb. nov.
Lindmania wurdackii L. B. Smith, Mem. New York Bot. Gard. 9:284,
fig. 13. 1957.

FOSTERELLA L. B. Smith, gen. nov.

Terrestris, acaulis; foliis rosulatis, integris vel serrulatis, laminis basi plus minusve attenuatis; scapo elongato, erecto; inflorescentia plerumque laxe paniculata, saepe tripinnata; floribus parvis, homomorphis, hermaphroditis; sepalis liberis; petalis liberis, nudis, sepala multo superantibus, plerumque albis; staminibus interioribus cum petalis brevissime connatis; antheris linearibus, basifixis; ovario omnino supero, glabro; placentis elongatis; stylo gracillimo; capsula septicide vel loculicide dehiscente; seminibus bicaudatis. Type species: F. micrantha (Lindl.) L. B. Smith (Pitcairnia micrantha Lindl.) Pl. I.

This new genus is dedicated to Mulford B. Foster, discoverer extraordinary of new species of Bromeliaceae.

FOSTERELLA ALBICANS (Griseb.) L. B. Smith, comb. nov.
Cottendorfia albicans Griseb. Symb. Argent. in Goett. Abh. 24:
 330. 1879.

Lindmania albicans (Griseb.) Mez in DC. Monogr. Phan. 9:537.
 1896.

FOSTERELLA ALETROIDES (L. B. Smith) L. B. Smith, comb. nov.
Lindmania aletroides L. B. Smith, Contr. U. S. Nat. Herb. 29:530,
fig. 86. 1954.

FOSTERELLA GRACILIS (Rusby) L. B. Smith, comb. nov.
Catopsis gracilis Rusby, Bull. New York Bot. Gard. 6:489. 1910.
Lindmania gracilis (Rusby) L. B. Smith, Contr. Gray Herb. 104:78.
 1934.

FOSTERELLA GRAMINEA (L. B. Smith) L. B. Smith, comb. nov.
Lindmania graminea L. B. Smith, Lilloa 14:93, figs. 1-4. 1948.

FOSTERELLA MICRANTHA (Lindl.) L. B. Smith, comb. nov.
Pitcairnia micrantha Lindl. Bot. Reg. 29: Misc. 44. 1843.
Cottendorfia neogranatensis Baker, Handb. Bromel. 129. 1889.
Lindmania neogranatensis (Baker) Mez in DC. Monogr. Phan. 9:538.
 1896.

Lindmania flaccida Standley, Journ. Washington Acad. Sci. 13:364.
 1923.

Pl. I, fig. 1: Mexia 9187a, habit x 2/5; fig. 2: Flower x 1; fig. 3: Petal and stamen x 5; fig. 4: Ovary x 5; fig. 5: Seed x 10.

- FOSTERELLA PEARCEI (Baker) L. B. Smith, comb. nov.
Cottendorfia pearcei Baker, Handb. Bromel. 128. 1889.
Lindmania pearcei (Baker) Mez in DC. Monogr. Phan. 9:537. 1896.
- FOSTERELLA PENDULIFLORA (C. H. Wright) L. B. Smith, comb. nov.
Catopsis penduliflora C. H. Wright, Kew Bull. 1910:197. 1910.
Lindmania penduliflora (C. H. Wright) Stapf, Bot. Mag. 150: pl.
9029. 1924.
- FOSTERELLA PETIOLATA (Mez) L. B. Smith, comb. nov.
Lindmania petiolata Mez, Bull. Herb. Boiss. II. 4:864. 1904.
- FOSTERELLA ROJASII (L. B. Smith) L. B. Smith, comb. nov.
Lindmania rojasii L. B. Smith, Rev. Argentina Agron. 7:162. figs.
1-3. 1940.
- FOSTERELLA RUSBYI (Mez) L. B. Smith, comb. nov.
Lindmania rusbyi Mez, Bot. Jahrb. 30, Beibl. 67:6. 1901.
- FOSTERELLA VILLOSULA (Harms) L. B. Smith, comb. nov.
Lindmania villosula Harms, Notizblatt 10:794. 1929.
- FOSTERELLA WEBERBAUERI (Mez) L. B. Smith, comb. nov.
Cottendorfia rusbyi Baker, Bull. Torrey Bot. Club 29:697. 1902.
 Not Lindmania rusbyi Mez, 1901.
Lindmania weberbaueri Mez, Repert. Sp. Nov. Fedde 12:417. 1913.
- FOSTERELLA WEDDELLIANA (Brongn. ex Baker) L. B. Smith, comb. nov.
Cottendorfia weddelliana Brongn. ex Baker, Handb. Bromel. 129.
 1889.
Lindmania weddelliana (Brongn. ex Baker) Mez in DC. Monogr. Phan.
 9:538. 1896.
- VRIESEA, not VRIESIA
 The new list of conserved generic names of spermatophytes ratified at the International Botanical Congress in Montreal in 1959 has conserved the amended orthography or spelling of Vriesea as follows:
 891. Vriesea Lindley, Bot. Reg. 29: t. 10. 7 Feb. 1843 ('Vriesia'); corr. J. G. Beer, Bromel. 91. 1857.
 (H. W. Rickett & F. A. Stafleu, Nomina Generica Conservanda et Rejicienda Spermatophytorum, Taxon 8:232. 1959).
- VRIESEA RINGENS (Griseb.) Harms, Notizblatt 10:801. 1929.
Tillandsia ringens Griseb. Cat. Pl. Cub. 255. 1866.
 Petals not flaccid after anthesis, exceeding the stamens; apical appendage of the seed entire.
 PANAMA: Cultivated, November 30, 1954, M. B. Foster 2848 (US, flowers and photos).
 CUBA: Oriente: Near Monte Verde, January-July, 1859, C. Wright 1518 (GH, isotype, flowers).
 LESSER ANTILLES: St. Vincent: Mountains above Chateaubelair

River, alt. 400-750 m., April 23, 1947, C. V. Morton 5305 (US, fruit).

Harms has already pointed out that Vriesea ringens does not belong in the genus or subgenus Alcantarea, but Mez ignored this fact in his final monograph in the Pflanzenreich. As shown by the material cited above, V. ringens is related to V. viridiflora (Regel) Wittm. ex Mez in the form of its flowers and seed and in its verrucose bracts.

MEXICO

TILLANDSIA MAURYANA L. B. Smith, Contr. Gray Herb. 117:31, pl. 2, figs. 32, 33. 1937.

Tillandsia atroviridipetala Matuda, Cact. 7 Sucul. Mex. 2:53, fig. 40. 1957.

VRIESEA OVANDENSIS Matuda, Cact. 7 Sucul. Mex. 2:78, fig. 51. 1957.

Vriesea platynema sensu L. B. Smith, North Am. Fl. 19:162, 163. 1938, as to "Chiapas" citation. Non Guad. 1843.

MEXICO: Chiapas: On trees, forest, near Fenia, Purpus 300 (US, basis of "V. platynema" citation). Oaxaca: Terrestrial, Cerro Atravesado - Cerro Azul, March 15, 1948, MacDougall "bromel" 136 (US).

As shown by Dr. Matuda, Vriesea ovandensis is distinguished by its long floral bracts that cover the sepals and that are about 4 times as long as the short internodes so that they generally remain imbricate after anthesis. Thus no record remains for V. platynema in continental North America.

VRIESEA VANHYNINGII L. B. Smith, sp. nov.

A V. tonduziana L. B. Smith, cui affinis, laminis foliorum subtus dense lepidotis, bracteis florigeris tenuioribus haud rugulosis sed verrucosis, sepalis minoribus acutis differt.

Stemless, flowering 4 dm. high; leaves about 20 in a broadly funnellform rosette, to 27 cm. long, pale beneath and densely and finely lepidote; sheaths ovate, distinct, 10 cm. long; blades ligulate, acuminate, 25 mm. wide, green above; scape erect, slender; scape-bracts imbricate, closely enfolding the scape, the upper elliptic, apiculate; inflorescence simple, 15 cm. long, densely 10-flowered; rhachis flexuous, slender, slightly sulcate; floral bracts erect, nearly 3 times as long as the internodes, scarcely if at all secund with the flowers, ovate, subacute and slightly cucullate, 4 cm. long, ecarinate, thin-coriaceous, sparsely verrucose, otherwise even, glabrous, pale castaneous when dry; pedicels 10 mm. long; sepals ovate, acute, 25 mm. long, ecarinate, thin-coriaceous, glabrous. Pl. II, fig. 1: Apex of leaf x 1/2; fig. 2: Inflorescence x 1/2; fig. 3: Sepal x 1.

Type in the U. S. National Herbarium, No. 2,219,906, collected on the Sierra de Juarez, 30 miles northeast of Extlan de Juarez, State of Oaxaca, Mexico, altitude 2100 meters, April 18, 1959, by O. C. Van Hyning (No. 5961).

CUBA

VRIESEA PLATYNEMA Gaud. var. *WRIGHTII* (L. B. Smith) L. B. Smith, comb. nov.

Guzmania wrightii L. B. Smith, Contr. Gray Herb. 117:11, pl. 1, figs. 17, 18. 1937.

Vriesea wrightii (L. B. Smith) Carabia, Mem. Soc. Cub. Hist. Nat. 15:361. 1941. As "*Vriesia*."

CUBA: Oriente: Near Monte Verde, *C. Wright* 1523 in part (GH, type). La Prenda, *Hioram* 2566 (NY). El Yunque, *Shafer* 8018 (NY). Sierra de Nipe, *Carabia* 3706 (GH).

This variety differs from typical *Vriesea platynema* in having a short basal part of the inflorescence with polystichous flowers like a *Guzmania* and long floral bracts covering the sepals. Yet the remainder of the inflorescence is indistinguishable from that of the typical variety. Under such circumstances its separation as a species seems unwarranted. The typical variety occurs in Jamaica, making a close parallel with the situation between typical *Tillandsia fasciculata* Sw. and its Cuban variety *clavispi*ca Mez.

COSTA RICA

VRIESEA BICOLOR L. B. Smith, sp. nov.

A *V. acuminata* Mez & Wercklé, cui verisimiliter affinis, laminae foliorum subrotundatis apiculatisque subtus dense adpressequae pallido-lepidotis differt.

Stemless, flowering 75 cm. high; leaves about 12 in a broadly funnelform rosette, 35-50 cm. long; sheaths elliptic, distinct, 15 cm. long, pale-lepidote toward apex, becoming glabrous toward base; blades ligulate, subrounded and apiculate, 6 cm. wide, covered with pale appressed scales beneath, becoming glabrous above; scape erect, stout; scape-bracts erect, imbricate, closely enfolding the scape, the lower subfoliaceous, the upper elliptic, apiculate, densely pale-lepidote, becoming glabrous and lustrous, castaneous when dry; inflorescence simple, narrowly lanceolate, acute, 25 cm. long, strongly complanate, subdensely 19-flowered; rhachis geniculate, stout, sulcate, pale-lepidote; floral bracts suberect, not secund with the flowers, ovate, obtuse and slightly cucullate, 6 cm. long, exceeding the sepals, ecarinate, coriaceous, even, densely pale-lepidote before anthesis, becoming glabrous and sublustrous, bronze-brown (! Foster), castaneous when dry with a very narrow pale margin; pedicels stout, 10 mm. long; sepals broadly ovate, obtuse and slightly cucullate, 35 mm. long, ecarinate, coriaceous, even, covered with pale appressed scales, castaneous; petals elliptic, 6 cm. long, bronze-cream-green at base (! Foster) and bearing 2 acute scales; stamens included. Pl. II, fig. 4: Habit after photo; fig. 5: Sepal x 1.

Type in the U. S. National Herbarium, Nos. 1,985,939 to 1,985,941, collected high in trees, above Cartago, Costa Rica, altitude 1500 meters, December 15, 1948, by Mulford B. Foster (No. 2676).

VRIESEA NUTANS L. B. Smith, sp. nov.

A V. verrucosa L. B. Smith, cui bracteis florigeris verrucosis verisimiliter affinis, scapo elongato decurvato, inflorescentia pendula differt.

Only specimen old and worn but obviously a distinct species, stemless, 8 dm. long with the inflorescence extended; leaves about 15, subfasciculate, to 65 cm. long, green, concolorous, obscurely pale lepidote; sheaths elliptic, 12 cm. long; blades ligulate, acuminate, 25 mm. wide; scape decurved, very slender; scape-bracts imbricate and tightly enfolding the scape, thin, stramineous when dry, verrucose; inflorescence simple, linear, complanate, 18 cm. long, densely 12-flowered; rhachis geniculate, compressed, verrucose below the nodes; floral bracts ovate, over 3 cm. long, much exceeding the sepals, ecarinate, stramineous when dry, densely verrucose; flowers erect, not secund; pedicels stout, 5 mm. long; sepals ovate, over 18 mm. long, ecarinate, nearly even except the rugose-verrucose margins; capsule slenderly ellipsoid, beaked, 4 cm. long; coma white. Pl. II, fig. 6: Apex of leaf x 1; fig. 7: Section of inflorescence x 1.

Type in the U. S. National Herbarium, No. 1,985,982, collected on tree, road from Turrialba to Moravia, Province of San José, Costa Rica, altitude 900 meters, December 20, 1948, by M. B. Foster (No. 2717).

VRIESEA ORORIENSIS (Mez) Smith & Pittendrigh, Journ. Washington Acad. Sci. 43:403. 1953.

Guzmania ororiensis Mez in DC. Monogr. Phan. 9:917. 1896.

Thecophyllum ororiense (Mez) Mez, Bull. Herb. Boiss. II. 3:131. 1903.

Thecophyllum kupperi Suesseng. & Goepfinger, Bot. Jahrb. 72:292. 1942.

Vriesea kupperi (Suesseng. & Goepfinger) Smith & Pittendrigh, Journ. Washington Acad. Sci. 43:402. 1953. As "Vriesea."

COSTA RICA: Near Orori (Orosi), Oersted (Bromel. no.) 25 (C, type, F photo 22323). Irazú Volcano, alt. 2400 m., March 1894, Donnell Smith 4963 (US, paratype). Without locality, Kupper s. n (M, type of Thecophyllum kupperi Suesseng. & Goepfinger, US photo 5493).

BOLIVIA

TILLANDSIA PILOSA L. B. Smith, sp. nov.

A T. recurvata L. et T. mallemontii Glaziou ex Mez, quibus affinis, foliis lepidibus angustissimis retrorsis pilosovestitis, scapi bracteis haud apicalibus, bracteis florigeris glabris vel subglabris differt.

Caulescent, to 14 cm. long in flower; roots present; stems branching, densely massed, to 4 cm. long; leaves distichous, to 7 cm. long, densely pilose-lepidote with fine linear retrorse gray scales; sheaths broadly ovate, thin, several-nerved; blades recurving, linear, terete, ca. 1.5 mm. in diameter, the apex soft and filiform; scape terminal, to 7 cm. long, ca. 0.5 mm. in di-

anther, lepidote at first with suborbicular appressed scales, soon glabrous; scape-bracts typically 2, remote, never apical, forming a tight tube about the scape, lepidote, the lower with a prominent foliaceous blade, the upper soon glabrous; inflorescence simple, laxly 2-flowered and with a sterile remnant at apex; floral bracts ovate, acute, shorter than the sepals, thin, ecarinate, several-nerved, glabrous or nearly so; flowers erect, subsessile; sepals lanceolate, acute, 9 mm. long, short-connate posteriorly, thin, prominently nerved, glabrous; petals blue, drying to deep blue-purple, the blades spreading, elliptic, 2.5 mm. wide; stamens deeply included, exceeding the pistil. Pl. II, fig. 8: Habit x 1/2; fig. 9: Inflorescence x 1.

Type in the U. S. National Herbarium, No. 2,283,921, collected on thorny bushes in dry places, near Saipina, Province of Florida, Department of Santa Cruz, Bolivia, altitude 1800 meters, December 1959, by M. Cárdenas (No. 5513).

Only the shape of the petal-blade separates the subgenera Phytarrhiza and Diaphoranthema and Tillandsia pilosa seems to be about midway between the two. On account of the bright color of the petals I am inclined to place it in Phytarrhiza.

BRAZIL

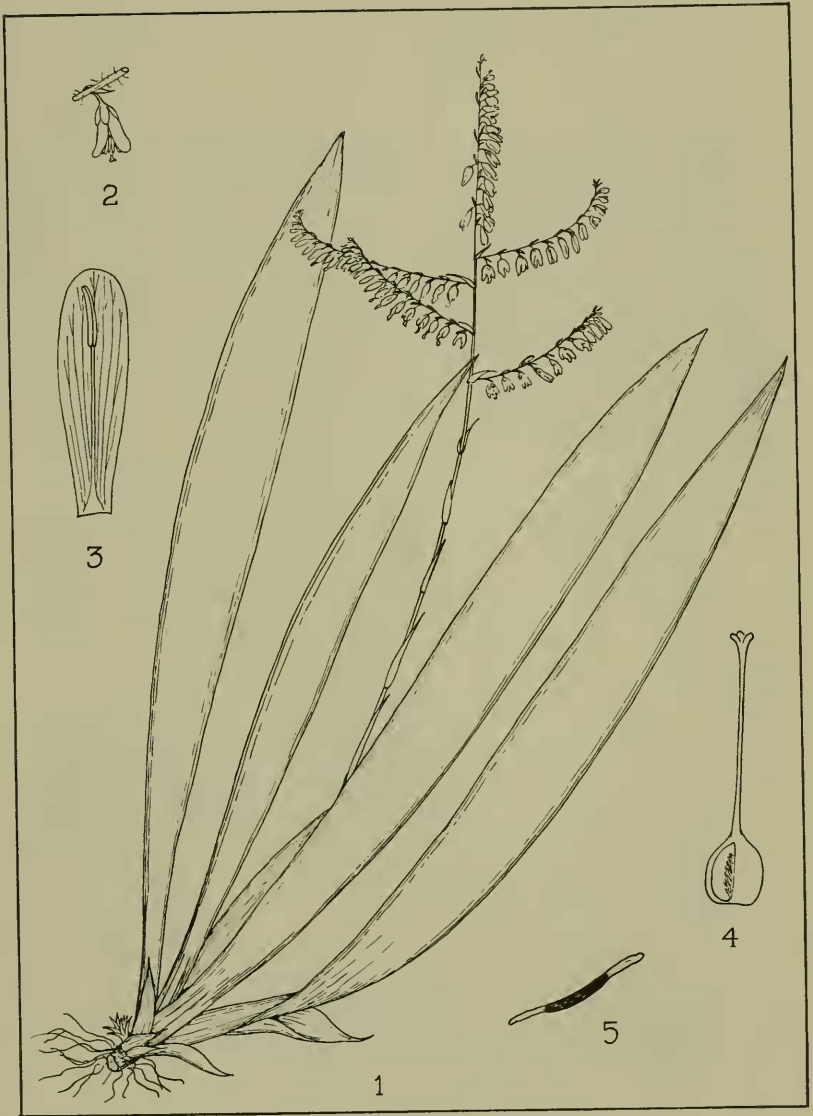
NEOREGELIA DOERINGIANA L. B. Smith, sp. nov.

A N. laeve (Mez) L. B. Smith, cui affinis, foliis minoribus, apice plus serrulatis, vaginis foliorum lepidibus atro-castaneis omnino obtectis, inflorescentia pauciflora, sepalis minus connatis purpureis differt.

Leaves about 10 in a funnelform rosette that is not constricted at apex, to 18 cm. long; sheaths elliptic, longer than the blades, pale but completely covered by appressed dark castaneous scales; blades broadly ligulate, rounded-retuse with a minute usually deciduous apiculus, ca. 3 cm. wide, obscurely serrulate near apex and entire elsewhere, covered with coarse appressed white scales beneath, soon glabrous above, tinged with dark purple; inflorescence about equaling the leaf-sheaths, 2 cm. in diameter, few-flowered; outer bracts broadly ovate, much exceeded by the sepals, membranaceous, sparsely pale brown-lepidote; floral bracts like the outer bracts but narrower; pedicels slender, 5 mm. long; sepals only slightly asymmetric, oblong, obtuse, 13.5 mm. long; petals white (! Doering). Pl. II, fig. 10: Apex of leaf x 1; fig. 11: Inflorescence x 1; fig. 12: Sepal x 1.

Type in the U. S. National Herbarium, No. 2,320,671, collected in São Vicente, State of São Paulo, Brazil, in 1960, by Walter H. M. Doering (No. 7).

Plate I



FOSTERELLA MICRANTHA

Fig. 1: Habit (Mexia 9187a) x 2/5; fig. 2: Flower x 1;
 fig. 3: Petal and stamen x 5; fig. 4:
 Ovary x 5; fig. 5: Seed x 10.

Plate II

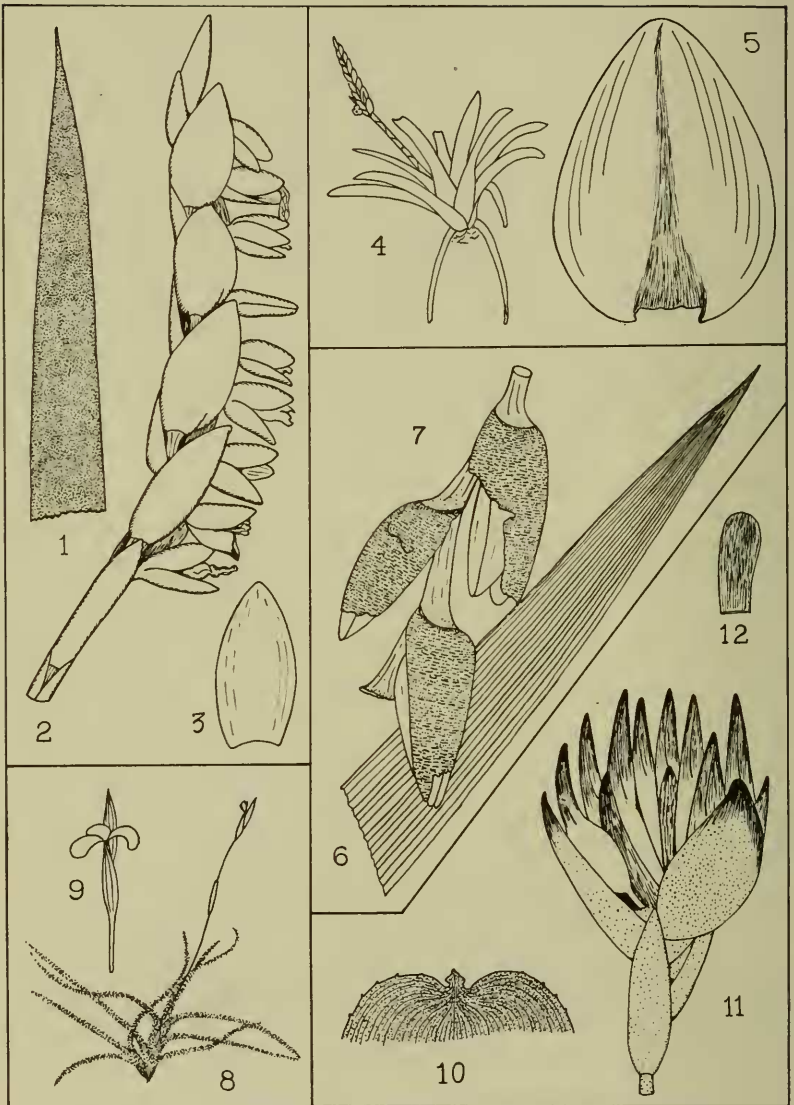


Fig. 1-3: *Vriesea vanhyningii*; fig. 4, 5: *V. bicolor*;
 fig. 6, 7: *V. nutans*; fig. 8, 9: *Tillandsia pilosa*;
 fig. 10-12: *Neoregelia doeringiana*.